

~~CONFIDENTIAL~~
RUBBER RESERVE COMPANY
MINUTES OF
SUBCOMMITTEE ON PLANT EFFLUENT
Second Meeting Held
at
Book-Cadillac Hotel
Detroit, Michigan
October 19, 1944

AttendanceMembers

Ludwig Meuser, Chairman	Rubber Reserve Company
C. A. Brown	General Tire & Rubber Company
W. H. Pahl	National Synthetic Rubber Corp.
C. H. Madsen	Canadian Synthetic Rubber Ltd.
W. F. Bixby	B. F. Goodrich Company
R. A. Gerlicher	Copolymer Corporation
W. C. Warner	Firestone Tire & Rubber Company
J. C. Crawford	Blaw-Knox Company
L. A. Woerner	Goodyear Synthetic Rubber Corp.
J. C. H. Wendes	United States Rubber Company
R. E. Rostenbach, Secretary	Rubber Reserve Company

Visitors

E. Werner	Blaw-Knox Company
E. L. Niederhofer	Blaw-Knox Company
L. D. Dougan	Polymer Corporation, Ltd.
G. L. Bruggemeier	Firestone Tire & Rubber Company
B. J. Oakes	National Synthetic Rubber Corp.
R. F. Dimmitt	Rubber Reserve Company
R. W. Plummer	Rubber Reserve Company
A. E. Boss	Rubber Reserve Company
J. W. Livingston	Rubber Reserve Company
W. R. Hucks	Rubber Reserve Company

The meeting was called to order by the Chairman at 9:15 A. M. Mr. Meuser emphasized the importance of the information to be collected by the operators so that Blaw-Knox may proceed with engineering necessary in connection with the committee's recommendations and the data to be compiled on effluent conditions for future reference.

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I Data To Be Accumulated

1. It was agreed that operators should collect and analyze samples for a period of one month.
2. It was agreed that operators would collect samples of the main plant effluent twice each shift and composite these samples for each 24 hours for 30 days and make an analysis of the composite samples as outlined hereafter.
3. It was agreed that operators would collect samples of the effluent leaving the Pigment Building twice each shift and composite these samples for each 24 hours for 30 days and make an analysis of the composite samples as outlined hereafter. If, at the sampling time, no flow is noted in the effluent line, this fact should be reported in a record book.
4. It was agreed that operators would collect samples of effluent leaving the Reactor Area twice each shift and composite these samples for each 24 hours for 30 days and make an analysis of the composite samples as outlined hereafter. Unusual situations effecting the effluent should be thoroughly investigated and reported.
5. It was agreed that operators would collect samples of effluents leaving the Recovery Area twice each shift and composite these samples for each 24 hours for 30 days and make an analysis of the composite samples as outlined hereafter. Unusual situations effecting the effluent should be thoroughly investigated and reported.
6. It was agreed that operators would collect samples of effluent leaving the Finishing Area three times each shift and composite these samples for each 24 hours for 30 days and make an analysis of the composite samples as outlined hereafter.
7. It was agreed that operators would collect samples of the effluent leaving the Evaporator Unit twice each shift and composite these samples for each 24 hours for 30 days and make an analysis of the composite samples as outlined hereafter.
8. It was agreed that operators would collect samples of effluents leaving the Laboratory three times each shift and composite these samples for each 24 hours and make an analysis of each composite sample as outlined hereafter.

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9. It was agreed that the following analyses are to be made on the above composite samples:
- A. 1. Odor and appearance
 - 2. pH
 - 3. Total solids
 - 4. Suspended solids
 - 5. Coagulable solids
 - 6. Dissolved solids
 - B. Oxygen consumed is to be determined on the total commingled plant effluent.
10. It was agreed that the above analyses would be made on the various daily composited samples, for the following periods:
- | | |
|---------------------|-----------------|
| Effluent from plant | one per day |
| Pigment building | twice per week |
| Reactor area | twice per week |
| Recovery area | every other day |
| Finishing area | every other day |
| Evaporator unit | twice per week |
| Laboratory | twice per week |

It was pointed out by Mr. Meuser that analyses could be made more frequently if the operator so desired and that the frequency set forth here was for a minimum number of samples.

It was pointed out that most plants have other areas such as power plants, water treatment plants, brine purification plants, etc. which discharge effluents and hence these should be sampled and analyzed as the operator deems necessary.

The following notations were made with reference to the effluents from the various areas:

The amount of the effluent from the Pigment area is very small. The effluent is of a serious nature only upon occasion of spills, wash waters, etc. R. E. Rostenbach suggested that the spills be recorded in the record and the effect of the spill noted in the final plant effluent.

The effluent from the Reactor area is also small. Most effluents would result when units were being cleaned and repaired, or possibly from spills in the meter room.

The effluent from the Recovery area would be in the nature of latex spills and wash waters resulting from cleaning equipment and floors.

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The Finishing area is the greatest source of pollution, due to the presence of oil, latex, antioxidant, salt, acid, and rubber crumb. It was also noted that it may be necessary to collect samples from several sources to obtain a representative sample of this area.

With reference to Laboratory effluents, Mr. W. H. Pahl stated that they coagulate their latex samples in a field laboratory and hence they may have to report two laboratory areas. Mr. Meuser emphasized the importance of providing receptacles for latex and other rubber wastes which may get into the laboratory drains. This material should be disposed of in a manner so that it does not reach the water courses.

Mr. C. H. Madsen stated that they had collected samples from eight separate areas. The samples were taken every hour and composited for each shift. Two men were required to collect the samples; one man acted as a safety-man.

Mr. C. A. Brown stated that it was necessary for them to go through the Humble properties to get to a location where they could collect a sample.

Mr. W. F. Bixby stated that, since Borger plant has a large basin which collects the plant effluent, it was not necessary for them to sample their effluent so frequently.

Mr. Meuser suggested that colored photographs be taken of representative samples of the plant effluent and kept as a permanent record. He stated that if colored photographs could not be made, ordinary photographs could be made. Mr. Meuser emphasized the importance of maintaining an accurate record of the nature of plant effluents to show that the Government owned synthetic rubber plants acted to the best of their ability, and brought about an amelioration of conditions.

It was reported that the plant effluent of the Firestone, Akron, plant has been surveyed by the city of Akron. Samples were taken every 15 minutes.

Messrs. C. H. Madsen and L. D. Dougan presented Canadian data which was distributed to those present on "Threshold Concentrations for Polymer Effluent Streams". This information was on the basis of both taste and odor and is important since the copolymer plant at Sarnia discharges effluent into the St. Clair River, which is a source of potable water.

Messrs. W. F. Bixby and C. H. Madsen stressed the point that the quality of flow should be determined from each area of the plant. Mr. Meuser stated that several plants have made wooden "V" notch weirs and

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placed them in the effluent lines. The weirs were reported to have been held in place by sand bags. Mr. Meuser also stated that all plants should make prompt application on Form S-4 for the installation of recording flow meters on the plant effluent line.

Mr. C. A. Brown stated that they are not adequately equipped with manholes for sampling the plant effluent. It was suggested that these facilities be included in their application for the recording flow meter.

Mr. R. W. Plummer suggested that Blaw-Knox investigate sampling equipment capable of taking a representative specimen for use in conjunction with the flow meters.

Mr. Meuser cautioned the operators concerning the hazards encountered when men are working in sewers potentially capable of carrying asphyxiating, combustible and explosive gases.

II Regulatory Bodies

Dr. R. E. Rostenbach outlined the legislation which has been before the Congress for the past eight years. He also reviewed the activities of the various federal and state agencies in the pollution surveys of the Canadian river and the Ohio river. Several of the recommendations of the Ohio River Committee for the abatement of pollution were presented including:

"Construction, at the earliest practicable date, of

- 1) primary treatment facilities for domestic sewage, including chlorination where necessary, by all communities within 27 metropolitan areas, "including Louisville, Cincinnati, Pittsburgh, and Charleston, "and
- 2) industrial waste-treatment facilities, rendering a degree of treatment equivalent to that provided by the communities, by all industries located within the same area whose wastes cannot be handled by community facilities!"

Mr. C. A. Brown stated that their effluent had contained some carbon black and they have had some complaints. He presented a photostatic copy of a letter signed by eleven people expressing concern of waste materials in the plant effluent and requesting that immediate steps be taken to eliminate rubber fines, sediment, and carbon black from the plant effluent.

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Mr. C. A. Brown also exhibited an editorial from the Texas Game & Fish magazine October, 1944, which relates an account of poisonous substances causing the fish to leave the water. The closing paragraphs are as follows:

"Most of the industries in Texas are cooperating with the Game Department in curbing pollution of the State's streams and lakes. But every now and then some workman, unknown to the management, takes the easy way out--he dumps his poisonous waste into the water.

The fish in the streams and lakes of Texas belong to the State and consequently every citizen of the State has an interest in them. And they can help the Game Department curb pollution. It is their problem as much as it is the Game Department's problem. They can insist that industries dispose of their poisonous waste by safe methods. Strong pressure by local groups frequently will do the trick.

There is no excuse for pollution. Let's end it now!"

It was Mr. C. A. Brown's belief that an aluminum hydrate sludge from the Spaulding precipitators was causing a white sediment in the stream. It was noted by others that the aluminum hydrate floc may be the cause for the carbon black showing up so prominently, since it is believed that the carbon black clings to the alum floc. The Canadian plant reported similar experience with alum floc. It reported that it breaks similar emulsions by means of ferrous sulfate.

III Engineering

Mr. J. C. Crawford of Blaw-Knox distributed reports entitled:

"Effluent Clarification Waste Water Disposal System for Synthetic Rubber Plants, Brochures No. 1 and No. 2".

These reports deal respectively with a general survey of existing facilities, as set forth by means of line drawings, and with a review of effluent conditions in a copolymer plant and suggestions for future improvements.

Mr. Crawford reported that he had not received all of the topographical data from the various operators. It was pointed out that the operators should write to The Director, United States Geological Survey, Washington, D. C. for prints of the area in which the plants are located.

It was agreed that all operators would review the brochures, especially No. 1, and make the necessary additions and supplements of information to complete the reports in detail. It was agreed that this information or a statement that no additions were to be made, be in the Blaw-Knox offices by November 2, 1944.

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It was suggested that the boiler plant and water plants should be shown on Print Q-1-1 of Brochure No. 2.

At Mr. Livingston's suggestion, in order to save time, it was agreed that the operators would send Blaw-Knox effluent flow estimates against which Blaw-Knox could check their estimates and proceed with the engineering and design of units necessary to handle efficiently the effluents from the various areas and units.

Mr. Crawford stated that Blaw-Knox was ready to go ahead with the information at hand and make the necessary revisions to fit possible maximum flows.

Mr. Livingston recommended that the disposal system have a small final basin which could be used for observation of the effluent leaving the plant.

On the matter of handling spills, etc., Mr. J. C. H. Wendes said that the U. S. Rubber plants at Naugatuck and Torrance were using or have planned to use catch basins. He recommended that the basins be installed immediately and that they be large enough to hold up the abnormal spills long enough so that they may be disposed of gradually.

IV Action Taken on General Recommendations

The operators and consultants reported the following on the General Recommendations of the First Meeting.

1. Blaw-Knox distributed Brochure No. 1 and No. 2. It was requested by Blaw-Knox that the operators submit additions and revisions as soon as possible.
2. All operators are now collecting fundamental data on plant effluent. Goodrich, Port Neches, is reporting for both Firestone and Goodrich, Agent plants at Port Neches, Texas.
3. On the recommendation that all plants be equipped at once with a closed system to handle the seal-water from Nash compressors and vacuum pumps, the following plants have completed this work:

General, Baytown; Goodyear, Los Angeles; U. S. Rubber, Los Angeles; Firestone, Port Neches; Firestone, Lake Charles; Goodrich, Borger; Copolymer Corporation, Baton Rouge; and Canadian Synthetic Rubber, Ltd., Sarnia.

The following plants have nearly completed this work:

National Synthetic Rubber Corporation, Louisville;
Goodyear, Akron; Firestone, Akron; U. S. Rubber, Institute; Goodrich, Louisville.

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The following plants are yet to be equipped:

Goodyear, Houston; Goodrich, Port Neches; U. S. Rubber, Naugatuck.

It is estimated that all plants will be operating the Nash Compressors and vacuum pumps with a closed seal-water system within two months.

4. On recommendation that provisions be made to handle TBC caustic solutions, the operators report the following:

Goodyear Synthetic Rubber Corporation

Akron This material is disposed of into the sanitary sewage which is treated by the Botzum municipal sewage plant and its effluent is discharged into the Cuyahoga River. It was noted that the Cleveland water supply is affected by this river.

Los Angeles Plans are proposed to dispose of this material by leaching it away through a soaking pit or by burning.

Houston This material is collected in a basin and is discharged gradually into the sewer and Sims Bayou.

United States Rubber Company

Los Angeles Plans are proposed to dispose of TBC by seepage or burning.

Naugatuck Plans are proposed to dispose of TBC by burning.

Institute Discharges of TBC are made into the plant effluent and hence into the Kanawha River with a maximum flow of 2 gpm to maintain a TBC concentration below 10 parts per billion in the river.

B. F. Goodrich Company

Louisville Plans are proposed to steam and aerate this material and dispose of the oxidized material in the Louisville sewerage system at a slow and controlled rate. The effluent discharged to the sewer contains approximately 33 parts per billion of TBC. It is further diluted by other wastes entering the sewerage system.

Borger Disposal of this material is made into an earthen work open seepage and solarization pit.

Port Neches Discharges of this material are made gradually into the plant effluent which mixes with the voluminous Neches Butane plant effluent and thence discharges into the Neches River.

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Firestone Tire & Rubber Company

Lake Charles

and

Akron

Disposal is by ground seepage.

Port Neches

The TBC waste is handled along with the Goodrich Port Neches material.

Copolymer Corporation

Baton Rouge

Disposal of this material is by ground seepage.

General Tire & Rubber Company

Baytown

The TBC waste is collected in a basin and is discharged gradually, 75 gallons per day, into the plant effluent which has a flow of approximately 500 to 600 gallons per minute and discharges to Scott's Bay.

National Synthetic Rubber Corporation

Louisville

Discharges of this material are made gradually into the plant effluent sewer. The operators plan, within two weeks, to acidify this waste and burn the tarry residue.

Canadian Synthetic Rubber, Limited

Sarnia

This plant receives its butadiene and styrene uninhibited with TBC and, therefore, has no problem.

Discussions Concerning Disposal of TBC

The discussion on TBC emphasized that TBC could be disposed of by ground seepage or burning. Mr. Meuser pointed out that it is possible to acidify the dilute alkaline TBC and dispose of the tarry concentrate by burning or by burial.

Mr. Woerner stated that Goodrich, Akron, has had conversations with the city of Akron on disposal of TBC into the sanitary sewers. It is understood that the city of Akron has no objection to this disposal, but, nonetheless, close watch will be maintained. The operators plan to request a statement from the city confirming the above. Mr. C. A. Brown stated that General has permission to discharge the TBC into the sanitary sewers, also plans to confirm this authorization with municipal authorities.

In a discussion it was pointed out that the interests of water users down stream should be considered when discharging TBC in the sanitary sewers. It was noted that the sanitary sewage of both locations is treated before disposal into the water courses.

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5. On the recommendation that all oil drips be immediately diverted from entering the sewers, the plants reported the following:

Goodyear Synthetic Rubber Corporation - All plants are collecting oil drips

United States Rubber Company - Institute, and Los Angeles, have installed drip pans. Naugatuck will have catch basins and drip pans installed in two months.

B. F. Goodrich Company - A survey of the plants has been made. It is planned to install API separation at Port Neches. The oil from the Borger plant is collected in a pond.

Firestone Tire and Rubber Company - The Akron plant has catch basins. The Lake Charles plant has catch basins except in the reactor area. The Port Neches plant problem will be handled by Goodrich, Port Neches.

Copolymer Corporation - Baton Rouge - Oil drips are being collected and oil is being replaced by soap in many places.

General Tire & Rubber Company - Baytown - The work is in process and the plant is collecting and burning the oil. Also it is using soap in the place of oil in a number of places.

National Synthetic Rubber Corporation - Louisville - Oil drips are being collected.

Canadian Synthetic Rubber, Limited - Sarnia - All oil drips are being collected. Usage of oil in reactor seals has been reduced from five gallons to one pint per month.

6. On the recommendation that provisions be made to coagulate latex entering the present interceptor basins by accident, the following operators have taken action:

General Tire & Rubber Company, Baytown, and National Synthetic Rubber Corporation, Louisville, have provided acid line and facilities for coagulating material in sumps.

Goodyear at Akron, Houston and Los Angeles, and U. S. Rubber at Los Angeles, Naugatuck and Institute collect the material in sumps.

Goodrich at Louisville and Borger have a fines recovery pit and facilities for acid coagulation.

Firestone at Akron and Lake Charles have S-4 forms in for catch basins.

7. On the recommendation that regional interceptor basins be installed and that other equipment be designed by Blaw-Knox Company, some of

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the operators already have plans and projects under way to handle effluent problems.

Firestone at Akron and Lake Charles have submitted S-4 forms for facilities for the recovery of Alum.

U. S. Rubber and Goodyear, Torrance, have a project under consideration with Technical Consultants, Inc., San Francisco, to make a complete survey of the facilities required to alleviate their situation.

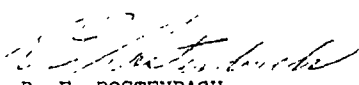
Canadian Synthetic Rubber, Ltd., Sarnia, has a project for approximately \$5,500 pending for the treatment of the plant effluent.

General, Baytown, has a project of approximately \$50,000 pending for the treatment of the plant effluent.

8. Mr. Meuser assumed that all plant managers had instructed and were training their personnel for the adequate handling of effluent during equipment washing operations and on spills.
9. Mr. Meuser stated that some of the plants have already submitted to him the names of the regulatory bodies which deal with the problems of plant effluent and waste disposal in their areas. He stated that the plants should complete this information both for their own files and those of Rubber Reserve.

It is obvious from the above review of action taken by the copolymer plants that the installation of additional interceptor basins and adequate disposal of spent alkaline-TBC solutions are the immediate urgent problems in the program.

The meeting was adjourned at 4:10 P. M.


R. E. ROSTENBACH
Secretary.

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